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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/782,488
Filing Date: February 18, 2004
Appellant(s): VAN BROCKLIN ET AL.

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GROUP 2800

Steven L. Nichols (Registration No. 40,326)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 13, 2006 appealing from the Office action mailed July 13, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

In view of this, the Amendment After Final filed on September 6, 2006, has now been entered. Upon entering, claims 1 and 2 are cancelled and claims 3 and 4 are now in allowable form. Claims 5-7, which depend from claim 4, are also allowed due to their dependency on allowable claim 4. It should be understood that claims 3 and 4 are *not* involved in this appeal. Claims 18 and 31 are involved in this appeal.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,538,748	Tucker et al.	3-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 18 and 31 are rejected under 35 U.S.C. 102(a) as being anticipated by Tucker et al. (USPN 6,538,748).

In regards to claim 18, Tucker discloses a method of calibrating a diffractive light device (DLD), comprising:

placing first and second opposing plates in a separated position defined by an actual gap distance (column 3, lines 18-23);

The diffractive light device is understood by the Examiner to be any optical device having a gap distance defined by opposing plates. A Fabry Perot filter is an example of an optical device having a gap distance defined by opposing plates.

directing light onto said DLD device to modulate the light (column 5, lines 40-43);

A Fabry-Perot device can be converted to a tunable laser by introducing light from a source into the device. Due to the design of the Fabry-Perot device, the light is modulated based on the resonant frequency of the Fabry-Perot cavity as indicated by the spacing in the cavity.

converting modulated light to an assumed gap value (column 1, lines 22-29 and column 5, line 59 to column 6, line 8);

The spacing between the opposing plates of a Fabry-Perot device is directly related the device's resonant frequency (i.e. wavelength). The controller of Tucker's laser feedback circuit uses a method to determine the difference in wavelength between a reference laser and Fabry-Perot device. The wavelength measurement from the Fabry-Perot device is a direct measurement of the spacing between the opposing plates, and, thus, the controller of Tucker is

configured to convert the light modulated by the Fabry-Perot into a light signal indicative of the gap spacing.

comparing said assumed gap value to a designer specified gap value; and

adjusting said assumed gap distance by a distance proportional to a difference between said assumed gap value and said designer-specified gap value (column 5, line 59 to column 6, line 8).

The wavelength of the reference laser in Tucker's device represents a designer-specified gap value, and the voltage correction value is indicated by the difference in wavelength between the Fabry-Perot device (i.e. gap as indicated by said light signal) and a reference laser wavelength (i.e. designer specified gap value, since wavelength value is indicative of a gap value in a Fabry-Perot device, as set forth above). A controller adjusts the potential between the first and second surfaces of the etalon to adjust the distance between the fixed and movable mirrors to reduce any differences found in the wavelengths.

In regards to claim 31, Tucker discloses a DLD system comprising:

means for diffracting light based on actual gap distance (column 3, lines 18-23);

The diffractive light device is understood by the Examiner to be any optical device having a gap distance defined by opposing plates. A Fabry Perot filter is an example of an optical device having a gap distance defined by opposing plates.

means for converting detected light values to assume gap values (column 1, lines 22-29 and column 5, line 59 to column 6, line 8);

The spacing between the opposing plates of a Fabry-Perot device is directly related the device's resonant frequency (i.e. wavelength). The controller of Tucker's laser feedback circuit uses a method to determine the difference in wavelength between a reference laser and Fabry-Perot device. The wavelength measurement from the Fabry-Perot device is a direct

measurement of the spacing between the opposing plates, and, thus, the controller of Tucker is configured to convert the light modulated by the Fabry-Perot into a light signal indicative of the gap spacing.

means for comparing said assumed gap values to designer-specified gap values; and

means for adjusting said actual gap distance to minimize the distance between said assume gap values and said designer specified gap values (column 5, line 59 to column 6, line 8).

The wavelength of the reference laser in Tucker's device represents a designer-specified gap value, and the voltage correction value is indicated by the difference in wavelength between the Fabry-Perot device (i.e. gap as indicated by said light signal) and a reference laser wavelength (i.e. designer specified gap value, since wavelength value is indicative of a gap value in a Fabry-Perot device, as set forth above). A controller adjusts the potential between the first and second surfaces of the etalon to adjust the distance between the fixed and movable mirrors to reduce any differences found in the wavelengths.

(10) Response to Argument

In view of the arguments with respect to claims 18 and 31, the appellant argues that Tucker clearly fails to teach or suggest a method that includes "converting modulated light to an assumed gap *value*" or "means for converting detected light *values* to assumed gap *values.*" The appellant further argues that the Tucker system fails to produce a *value* for the gap between opposing plates of the optical device and that it fails to teach or suggest "comparing said assumed gap *value* to a designer-specified gap *value*" or "means for comparing said assumed gap *value* to a designer-specified gap *value.*" (Emphasis added).

The appellant has further noted that, in this context, "value" is defined as "a numerical quantity that is assigned or is determined by calculation or measurement." (*See* Merriam-Webster On-Line Dictionary, http://www.m-w.com).

The Examiner disagrees with these arguments.

The Tucker system does produce a *value* for the gap between opposing plates of the optical device. The following equation applies to a Fabry-Perot etalon, which is understood to be a type of a diffractive light device:

$m\lambda = 2dn$, wherein

m is a integer number, λ is the wavelength of the light produced by the etalon due to modulation, d is the spacing between the reflective plates of the etalon, and n is the refractive index of the material in the spacing between the reflective plates of the etalon.

There is a direct relation between the wavelength of the light produced by a Fabry-Perot etalon and the spacing (i.e. gap) between the plates of the etalon. If the wavelength of the light produced by the etalon is known, the spacing can be found, and vice versa. The wavelength and the spacing are *values* because they are a numerical quantity that is assigned or is determined by calculation or measurement. The wavelength of a Fabry-Perot etalon is a numerical quantity that is measured, and, using the relation above, the spacing is a numerical quantity that is calculated using the measured wavelength. Therefore, light modulated by a Fabry-Perot etalon is converted into an assumed gap *value* because the wavelength *value* of the modulated light is used to calculate the spacing of the etalon, which is an assumed gap *value*. (Emphasis added).

The reference wavelength of the reference laser in Tucker's device represents a designer-specified gap *value* because of the reasons set forth above. The reference laser is an example of a designer-specified laser, and, therefore, the reference laser produces a designer-

specified *value* in the form of the designer-specified laser's wavelength *value*. A designer-specified gap *value* between the plates can be calculated using this designer-specified laser's wavelength *value* and the relation set forth above. (Emphasis added).

The assumed gap *value* and the designer-specified gap *value* are compared in the method Tucker. This comparison is performed by finding a difference in the wavelength *values* between that of the reference laser (corresponding to the designer-specified gap *value*) and the light modulated by the Fabry-Perot etalon (corresponding to the assumed gap *value)*. A difference in the wavelength *values* indicates a difference between a spacing of the etalon and that of the designer-specified gap *value* calculated using the designer-specified laser's wavelength *value*. A controller adjusts the potential between the first and second surfaces of the etalon to adjust the distance between the fixed and movable mirrors to reduce any differences found in the wavelengths. (Emphasis added).

In conclusion, Tucker does teach or suggest a method that includes "converting modulated light to an assumed gap *value*" or "means for converting detected light *values* to assumed gap *values."* The Tucker system does produce a *value* for the gap between opposing plates of the optical device and that it does teach or suggest "comparing said assumed gap *value* to a designer-specified gap *value*" or "means for comparing said assumed gap *value* to a designer-specified gap *value."* (Emphasis added).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Marissa Detschel

Marissa J. Detschel 2/27/07

Conferees:

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27 FEB 07

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